REMARKS

The Application has been carefully reviewed in light of the Office Action dated March 20, 2002 (Paper No. 6). Claims 20 to 23 have been cancelled without prejudice or disclaimer of the subject matter therein. Claims 1 to 19 and 24 to 38 are in the application, of which Claims 1, 11, 24 and 33 to 38 are the independent claims. Claims 1 to 7, 11 to 16, 24 to 29, 33 to 38 have been amended herein. Reconsideration and further examination are respectfully requested.

Turning first to some formal matters, Applicants have amended the specification herein to indicate the number of the U.S. Application incorporated by reference in the specification. With regard to the sentence located at page 2, lines 13 to 19, the parenthetical refers to the sentence as a whole, and is therefore considered to be appropriate.

By the Office Action, Claims 1 to 10, 14 to 17 and 26 to 29 have been rejected under 35 U.S.C. § 112, second paragraph. Applicants have reviewed the language of the claims and have amended the claims as deemed appropriate. Accordingly, Applicants request withdrawal of the § 112, second rejection of the claims.

Claims 1, 3, 11, 24 and 33 to 38 have been rejected under 35 U.S.C. § 102(b) over U.S. Patent 5,963,431 (Stancil) and an "IEEE 1394 standard".[1] Applicants

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[1]/Applicants refer the Examiner to MPEP § 2131, which states that to anticipate a claim, a reference must teach each and every element of the claim. MPEP § 2131.01 enumerates the limited circumstances in which use of multiple references to establish grounds for anticipation under 35 U.S.C. § 102 is permissible. It does not appear from the comments made in the Office Action that any of the circumstances described in MPEP § 2131.01 exist in the present case.

assume that the reference to an "IEEE 1394 standard" is meant to be made to the IEEE Computer Society's article entitled "IEEE Standard 1394 - IEEE Standard For A High Performance Serial Bus". If this assumption is incorrect, Applicants would request the Examiner to provide a full designation of the actual reference relied on by the Examiner for the § 102(b) rejection. Further and without conceding Applicants' position that the use of multiple references in support of the § 102(b) rejection is improper under the present circumstances, Applicants will discuss the combination of the references in the remarks provided below with respect to the 35 U.S.C. § 103(a) rejection of the claims.

Claims 1, 3, 10 to 11, 19, 24 and 32 to 38 are rejected under 35 U.S.C. § 103(a) over Stancil in view of the IEEE Computer Society's article entitled "IEEE Standard 1394 - IEEE Standard For A High Performance Serial Bus" (hereinafter referred to as the "1394 Specification"). Claims 2, 4 to 7, 9, 12, 13 to 16, 18, 20 to 23, 25 to 29 and 31 are rejected under 35 U.S.C. § 103(a) over Stancil in view of the the 1394 Specification and the Wetzel article entitled "IEEE 1394 - The Cable Connection to Complete the Digital Revolution" (hereinafter referred to as "Wetzel"), and Claims 8, 17 and 30 are rejected under 35 U.S.C. § 103(a) over Stancil, the IEEE Specification, Wetzel and U.S. Patent 5,161,857 (Mayercheck). Applicants traverse the rejections raised by the Office Action for at least the following reasons.

The present invention relates to a system for transmitting and receiving data over a IEEE 1394 standard bus using the same broadcast channel.

Conventionally, the IEEE 1394 standard bus (1394 bus) provides for isochronous transmission of data packets, which are sent and received every 125 microseconds in correspondence to one cycle. A maximum of 64 isochronous packets can

be sent over the bus per cycle. As a result, any device that uses the IEEE 1394 standard for isochronous transmission of data, is assigned an isochronous channel, ranging in value from 0 to 63. The channel is assigned to a specific device until it is released by that device.

In the case that two or more devices desire to use the same channel, the first device requesting access to an available channel will be assigned that channel. For example, if two devices request access to channel 63, the first device to request the channel will be assigned to channel 63. All other devices will be locked out from using channel 63 until the device using channel 63 releases the channel.

In the conventional 1394 approach, the problem of attempting to use the same channel occurs not only when more than 64 devices are attempting to access the 1394 bus, but can also arise even if only two or more digital video cameras are being used on the same 1394 bus. That is, many different digital video cameras are designed to transmit over a single preset channel number, or "broadcast channel" for transmitting digital video data packets over the 1394 bus. However, because the IEEE 1394 standard does not allow more than one device to use the same isochronous channel at one time, only one of the digital video cameras is permitted isochronous bandwidth and use of channel 63 to perform transmission of isochronous data on the bus. As a result of this conflict, two or more digital video cameras connected to the same 1394 bus cannot be used in a bi-directional video conferencing configuration, because at the sending and receiving sides, only one camera will be able to send data per bus.

Therefore, in any configuration where multiple digital video cameras (which have adopted the "broadcast channel" concept standard of U.S. Patent No. 5,535,208) are attempting to transmit isochronous data on a 1394 bus, only one camera will be able to

send isochronous data and all others will be locked out from sending isochronous data on the bus.

Heretofore, it has not been possible to send/receive data over the same 1394 bus when more than one device is attempting to use a single broadcast channel, for example, channel 63, of the 1394 bus. Accordingly, it is desirable to have a system that permits two or more devices to transmit or receive data using the same channel over a 1394 bus, so that transmitting data over a local data bus or a local area network by more than one device using the same broadcast channel becomes possible.

CLAIMS 1, 24, 33, 35, 36 AND 38:

Turning to the particular language of Claim 1, a system is provided for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same broadcast channel, comprising a controller interfaced to a bus, a first interface connected to the bus, and a second interface connected to the bus, wherein the controller is configured for 1) receiving data from the bus, attaching an identification (ID) header to the received data, and retransmitting the received data with the ID header onto the bus; and 2) receiving data with the ID header attached thereto, interpreting the ID header to identify which of the first or second interfaces should receive the data, and transmitting the data over the bus to the identified interface, wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

Stancil is not seen to teach or suggest the above-described features of Claim 1. Most particularly, Stancil is not seen to teach or suggest using the same broadcast channel to transmit and receive IEEE 1394 standard-formatted data using first and second

interfaces, and a controller configured to attach an ID header other than a 1394 header formatted in IEEE 1394 standard, to receive data and transmit the data and ID header onto a bus, and to interpret the ID header received with data to identify which of the first or second interfaces should receive the data.

Rather, Stancil is seen to describe a hardware configuration in which a motherboard may be easily removed from a chassis. In this regard, the problem intended to be solved by Stancil is the need for a secondary 1394 PHY host controller bus driver and associated USB device bay controller, which occurs when a primary 1394 PHY host controller is incorporated on the motherboard and the chassis has multiple device bays. To address this problem, Stancil describes mounting a plurality of 1394 ports on the riser card, which are coupled to a single 1394 PHY host controller and a single bus driver.

Stancil's approach of using a single 1394 PHY host controller and bus driver for multiple 1394 ports is seen to be different from the system of Claim 1, wherein data formatted in IEEE 1394 standard is communicated between devices using the same broadcast channel. Further, nothing in Stancil is seen to describe a controller that attaches an ID header other than a 1394 header formatted in IEEE 1394 standard to data, or a controller that interprets an ID header to identify which of first or second interfaces should receive the corresponding data.

The 1394 Specification is not seen to remedy the deficiencies of Stancil. More particularly and as indicated in the Application, the conventional 1394 approach using the IEEE 1394 standard is to require that each device use a different broadcast channel. Further and with respect to the citation in the Office Action to the header quadlets, these are 1394 header quadlets. Nothing in Figure 6-2 of the 1394 Specification

is seen to describe use of headers, which are other than 1394 headers, let along using headers other than 1394 headers to identify which of first or second interfaces should receive the data. Accordingly, the 1394 Specification is not seen to teach or suggest the features of Claim 1.

Wetzel and Mayercheck have been carefully reviewed and are not seen to remedy the deficiencies noted with respect to Stancil and the 1394 Specification as discussed above.

Therefore, for at least the foregoing reasons, Claim 1 is believed to be in condition for allowance. Further, Applicants submit that Claims 24, 33, 35, 36 and 38 are believed to be in condition for allowance for at least the same reasons.

CLAIMS 11, 34 AND 37:

Claim 11 is directed to a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same broadcast channel, comprising a controller interfaced to a bus, a first interface connected to the bus, and a second interface connected to the bus, wherein the controller is configured for receiving data over the bus and routing the data to either the first or second interface based on the received data.

Nothing in Stancil is seen to teach or suggest a system for transmitting and receiving data formatted in 1394 standard between devices using the same broadcast channel.

The 1394 Specification is not seen to remedy the deficiencies of Stancil, as it is also not seen to teach or suggest a system for transmitting and receiving data formatted in 1394 standard between devices using the same broadcast channel.

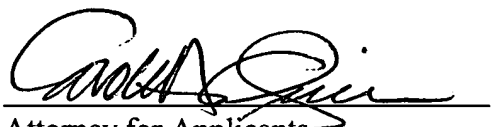
Accordingly, Claim 11 is believed to be in condition for allowance. Further, Claims 34 and 37 are believed to be in condition for allowance for at least the same reasons.

The remaining claims are each dependent from the independent claims discussed above and are therefore believed patentable for the same reasons. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



Attorney for Applicants

Registration No. 39,000

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-2200
Facsimile: (212) 218-2200

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APPENDIX

VERSION WITH MARKINGS TO SHOW
CHANGES MADE TO THE SPECIFICATION

Amend the paragraph beginning at page 1, line 12 as follows:

This application incorporates by reference commonly assigned U.S. Patent Application No. 09/166,487, [_____,] entitled "Digital Video Network Interface" (internal reference No. MOI-328/360), the disclosure of which is herein incorporated by reference, as if set forth in full.

Amend the paragraph beginning at page 9, line 34 as follows:

In order to transmit large volumes of data, which is typically needed for transmitting digital video data, it is preferable that network 7 is a Gigabit Ethernet network. In this regard, U.S. Patent Application No. 09/166,487, [_____,] entitled "Digital Video Network Interface", describes the method and system for interfacing 1394 network interface 3 between digital video cameras and a local area network, such as a Gigabit Ethernet network. Briefly, as described in that application, each of network interfaces 3 and 8 include send and receive buffers, which operate to buffer and translate isochronously-timed data to and from the asynchronously-timed data of the Gigabit Ethernet. The reader is directed to the disclosure in that document for further detailed explanation regarding communication between a 1394 network interface according to the present invention and local area network 7.

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controller [CPU] interfaced to a bus;

a first [1394] interface connected to the bus; [via first physical and link layers;] and

a second [1394] interface connected to the bus, [via second physical and link layers,]

wherein the controller [CPU] is configured for 1) receiving data from the bus, attaching an identification (ID) header to the received data, and retransmitting the received data with the ID [prefixed] header onto the bus; and 2) receiving data [prefixed] with [a] the ID header attached thereto, interpreting the ID header to identify which of the first or second [1394] interfaces should receive the data, and transmitting the data over the bus to the identified [1394] interface,

wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

2. (Amended) A system according to Claim 1, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives

digital video data isochronously through the first [1394] interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second [1394] interface.

3. (Amended) A system according to Claim 1, wherein the ID header identifies the type of data, the data recipient and amount of data.

4. (Amended) A system according to Claim 2, wherein the digital video data output from either the first or second video camera includes 1394 header information, data, and header check and data check information, and wherein the link layer for each respective [1394] interface removes the 1394 header and header check and data check information prior to transmitting the data over the bus to the controller [CPU].

5. (Amended) A system according to Claim 2, further comprising a network controller for accessing a local area network and for transmitting data with the ID header, wherein the network controller receives the data and the ID header, attaches a network header to the data and repackages the data with the ID header and network header into a network data packet and, upon receiving access to the local area network, transmits the network packet over the local area network to a receiving side network controller based on the attached network header.

6. (Amended) A system according to Claim 5, wherein received network data packets are unpackaged, network headers are removed, and the ID header is interpreted to identify which [1394] interface should receive the data.

7. (Amended) A system according to Claim 6, wherein the link layer of the identified [1394] interface attaches 1394 header and data information to the data and transmits the data through the physical layer to the identified [1394] interface in an isochronous manner and where, in the case the identified [1394] interface connects to the first digital video camera, the identified [1394] interface outputs the data in the isochronous manner to the first digital video camera and, in the case the identified [1394] interface connects to the second digital video camera, the identified [1394] interface outputs the data in the isochronous manner to the second digital video camera.

11. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controller [CPU] interfaced to a bus;

a first [1394] interface connected to the bus; [via first physical and link layers;] and

a second [1394] interface connected to the bus, [via second physical and link layers,]

wherein the controller [CPU] is configured for receiving data over the bus and routing the data to either the first or second [1394] interface based on the received data.

12. (Amended) A system according to Claim 11, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives digital video data isochronously through the first [1394] interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second [1394] interface.

13. (Amended) A system according to Claim 12, wherein the digital video data output from either the first or second video camera includes 1394 header information, data, and header and data check information and wherein the link layer for each respective [1394] interface removes the 1394 header and header data check information prior to transmitting the data over the bus to the CPU.

14. (Amended) A system according to Claim 12, further comprising a network controller for accessing a local area network and for transmitting data with [the] an identification (ID) header, wherein the network controller receives the data and the ID header, attaches a network header to the data and repackages the data with the ID header

and network header into a network data packet and, upon receiving access to the local area network, transmits the network packet over the local area network to a receiving side network controller based on the attached network header, wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

15. (Amended) A system according to Claim 14, wherein received network data packets are unpackaged, network headers are removed, and the ID header is interpreted to identify which [1394] interface should receive the data.

16. (Amended) A system according to Claim 15, wherein the link layer of the identified [1394] interface attaches a 1394 header and data information to the data and transmits the data through the physical layer to the identified [1394] interface in an isochronous manner and where, in the case the identified [1394] interface connects to the first digital video camera, the identified [1394] interface outputs the data isochronously to the first digital video camera and, in the case the identified [1394] interface connects to the second digital video camera, the identified [1394] interface outputs the data isochronously to the second digital video camera.

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controller [CPU] interfaced to a bus;

a first [1394] interface connected to the bus; [via first physical and link layers;] and

a second [1394] interface connected to the bus, [via second physical and link layer,]

wherein the controller [CPU] is configured for 1) receiving data from the bus, attaching an identification (ID) header and a subheader to the received data, and retransmitting the received data with the [attached] ID header and subheader onto the bus; and 2) receiving data with [an attached] ID header and subheader attached thereto, interpreting the ID header and subheader to identify which of the first or second [1394] interfaces should receive the data and which broadcast channel in the identified [1394] interface should receive the data, and transmitting the data over the bus to the identified [1394] interface.

wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

25. (Amended) A system according to Claim 24, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives digital video data isochronously through the first [1394] interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second [1394] interface.

26. (Amended) A system according to Claim 25, wherein the digital video data output from either the first or second video camera includes 1394 header information, data, and header check and data check information and wherein the link layer for each respective [1394] interface removes the 1394 header and header check and data check information prior to transmitting the data over the bus to the controller [CPU].

27. (Amended) A system according to Claim 25, further comprising a network controller for accessing a local area network and for transmitting data with the ID header and subheader, wherein the network controller receives the data and the ID header and subheader, attaches a network header to the data and repackages the data with the ID header and subheader and network header into a network data packet and, upon receiving

access to the local area network, transmits the network packet over the local area network to a receiving side network controller based on the attached network header.

28. (Amended) A system according to Claim 27, wherein received network data packets are unpackaged, network headers are removed, and the ID header and subheader are interpreted to identify which [1394] interface and channel in that [1394] interface should receive the data.

29. (Amended) A system according to Claim 28, wherein the link layer of the identified [1394] interface attaches a 1394 header and data information to the data and transmits the data through the physical layer to the identified [1394] interface in an isochronous manner and where, in the case the identified [1394] interface connects to the first digital video camera, the identified [1394] interface outputs the data in the isochronous manner to the first digital video camera and, in the case the identified [1394] interface connects to the second digital video camera, the identified [1394] interface outputs the data in the isochronous manner to the second digital video camera.

33. (Amended) A method for [For] use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using [the] a same [IEEE 1394] broadcast channel, the system having a controller [CPU] interfaced to a bus, a first [1394] interface connected to the bus, [via first physical and link layers,] and a second

[1394] interface connected to the bus, [via second physical and link layers, computer process steps for controlling the system,] the method comprising steps of:

[a step of] receiving data from the bus;

[a step of] attaching an identification (ID) header to the received data;

[a step of] retransmitting the received data with the [attached] ID header onto the bus;

[a step of] receiving data with [an attached] the ID header attached thereto;

[a step of] interpreting the ID header to identify which of the first or second [1394] interfaces should receive the data; and

[a step of] transmitting the data over the bus to the identified [1394] interface,

wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

34. (Amended) A method for [For] use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using [the] a same [IEEE 1394] broadcast channel, the system having a controller [CPU] interfaced to a bus, a first [1394] interface connected to the bus, [via first physical and link layers,] and a second [1394] interface connected to the bus, [via second physical and link layers, computer process steps for controlling the system,] the method comprising steps of:

[a step of] receiving data over the bus; and

[a step of] routing the data to either the first or second [1394] interface based on the received data.

35. (Amended) A method for [For] use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using [the] a same [IEEE 1394] broadcast channel, the system having a controller [CPU] interfaced to a bus, a first [1394] interface connected to the bus, [via first physical and link layers,] and a second [1394] interface connected to the bus, [via second physical and link layers, computer process steps for controlling the system,] the method comprising the steps of:

[a step of] receiving data from the bus;

[a step of] attaching an identification (ID) header and a subheader to the received data;

[a step of] retransmitting the received data with the ID header and subheader onto the bus;

[a step of] receiving data with [an attached] the ID header and [an attached] subheader attached thereto;

[a step of] interpreting the ID header and subheader to identify which of the first or second [1394] interfaces should receive the data and which broadcast channel in the identified [1394] interface should receive the data; and

[a step of] transmitting the data over the bus to the identified [1394] interface.

wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

36. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first [1394] interface means connected to the communication means; [via first physical and link layers;] and

a second [1394] interface means connected to the communication means, [via second physical and link layers,]

wherein the controlling means is configured for 1) receiving data from the communication means, attaching an identification (ID) header to the received data, and retransmitting the received data with the [attached] ID header onto the communication means; and 2) receiving data with [an attached] the ID header attached thereto, interpreting the ID header to identify which of the first or second [1394] interface means should receive the data, and transmitting the data over the communication means to the identified [1394] interface means,

wherein the ID header is other than a 1394 header formatted in IEEE 1394 standard.

37. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first [1394] interface means connected to the communication means; [via first physical and link layers;] and

a second [1394] interface means connected to the communication means, [via second physical and link layers,]

wherein the controlling means is configured for receiving data over the communication means and routing the data to either the first or second [1394] interface means based on the received data.

38. (Amended) A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same [IEEE 1394] broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first [1394] interface means connected to the communication means; [via first physical and link layers;] and

a second [1394] interface means connected to the communication means, [via second physical and link layers,]

wherein the controlling means is configured for 1) receiving data from the communication means, attaching an identification (ID) header and a subheader to the received data, and retransmitting the received data with the [prefixed] ID header and subheader onto the communication means; and 2) receiving data with [an attached] the ID header and [an attached] subheader attached thereto, interpreting the ID header and subheader to identify which of the first or second [1394] interface means should receive the data and which broadcast channel in the identified [1394] interface means should receive the data, and transmitting the data over the communication means to the identified [1394] interface means,

wherein the ID header is other than a 1394 header formatted in IEEE standard.

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